Remarks

This case has been carefully considered in light of the Office Action dated April 22, 2004 wherein: the finality of the previous rejection was vacated; claims 1-65 were rejected under the judicially created doctrine of obviousness-type double patenting over claims 1-34 of US Pat. No. 6,587,938; and claims 1-65 were rejected under 35 USC 103(a) over Matsuura (US Pat. No. 5,530,860 in view of Maeurer et al. (US Pat. No. 5,301,323). Reconsideration is respectfully requested.

Claims 1-65 remain pending in this case.

The specification has been amended on pages 1 and 2 to update the status of the cited patent applications filed concurrently therewith.

Applicants respectfully request withdrawal of the obviousness-type double patenting rejection of claims 1-65 in view of claims 1-34 of US Pat. No. 6,587,938 because the instant application and the cited patent were concurrently filed, as cited on the first page of Applicants' specification, lines 17-20. Applicants have amended the specification, as indicated hereinabove, to include the patent number of the cited reference, which was filed concurrently with the instant application. Therefore, upon issuance, a patent on the instant application would have the same termination date as the cited reference.

Applicants respectfully traverse the rejection of claims 1-65 under 35 USC 103(a) on Matsuura in view of Maeurer for the following reasons.

The present invention is directed to the problem of managing workload in a computing environment. More particularly, the present invention is a method (claim 1), system (claims 22 and 43), and program storage device embodying a program of instructions readable and executable by a machine to perform the method (claim 43) for managing workload across two or more partitions of a plurality of partitions of a computing environment, wherein a partition has one or more central processors allocated thereto, the managing comprising dynamically adjusting allocation of a shareable resource, wherein workload goals are being balanced. (see FIG. 1A, specification page 11, lines 1-23, through page 12, lines 1-12). Shareable resources may include

CPU resources, logical processor resources, input/output resources, channel resources, coprocessors, network adapters, and memory, among others (see specification page 15, lines 6-16; claims 3, 14, 24, 35, 47 and 58). In one aspect, the method comprises dynamically adjusting allocation of a shareable resource based on priority (FIG. 9; specification page 16, lines 12-15; page 40, lines 20-30, through page 47; claims 5, 19, 26, 40, 49 and 63). In a further aspect, the dynamically adjusting comprises moving the shareable resources to the physical work, i.e., moving at least a portion of the shareable resource from one partition to another partition (see specification page 17, lines 19-29; page 26, lines 20-30, through page 27, lines 1-2; and claims 4, 18, 25, 39, 48 and 62). In a still further aspect, the present invention is a method (claim 13), system (claims 34 and 44), and article of manufacture having computer readable code means for performing the method (claim 57), wherein the computing environment comprises two or more logical partitions concurrently sharing at least one shareable resource (see FIGs. 1-3, specification page 10, lines 6-9; and claims 13, 34, 44 and 57).

Matsuura describes a fixed allocation of CPU resources. In contrast, the Applicants claim managing workload in a computer environment comprising dynamically adjusting allocation of a shareable resource, such as a CPU. In particular, Matsuura describes the use of predetermined assignment ratios (see the Title, Abstract, Col. 1, lines 19-20 and Col. 11, lines 1-10, as examples). Matsuura also states that these predetermined assignment ratios are "exactly maintained" (i.e., fixed) (Col. 4, lines 49-51; Col. 7, lines 35-37). These fixed ratios are used in determining the allocation of CPU resources, but are not adjusted from their predetermined values. That is, Matsuura teaches how to assign resources to meet the ratios, but does not teach or suggest how to dynamically adjust the allocation (i.e., how to dynamically adjust the ratios). Again, in Matsuura, it is specifically stated that the ratios are predetermined and exactly maintained, and thus there is no dynamic adjustment of allocation.

The Office Action states that Matsuura teaches "managing workload across two or more partitions of said computing environment." To the contrary, the Applicants respectfully submit that Matsuura fails to teach or even suggest dynamically adjusting the resource allocation across partitions. The predetermined assignment ratios in Matsuura are assigned individually to virtual computers (Col. 11, lines 1-4). Thus, each predetermination of an assignment ratio stands alone;

it does not depend upon any other assignment ratio. Since each ratio assigned in Matsuura is independent and applies to a single virtual computer, it does not designate an allocation across multiple virtual computers. This is quite different from the present invention, which recites managing workload in a computing environment by an allocation of resources that is dynamically adjusted across partitions.

The Office Action cites the example in column 12 of Matsuura with respect to allocation of CPU's to partitions. However, Matsuura does not describe dynamically adjusting allocation, as recited by the Applicants, but instead describes techniques for assigning resources up to the predetermined fixed ratios when a guest enters a waiting state. As noted, in Matsuura, the assignment ratios are fixed. Assignment ratios in Matsuura also refer to time assignments of actual CPUs (see, e.g., Col. 8, lines 9-12). The 10% described in Col. 12 is representative of the amount of time that elapsed before guest VM2 passed into a waiting state. The 70% in Col. 12, line 36 just refers to the remaining CPU time allocated to VM2, which will allow it to obtain the 80% predetermined allocation ratio. Thus, the 80% predetermined ratio remains fixed (i.e., not adjusted). If the example in Col. 12 did include an adjustment of the predetermined 80% ratio for VM2 to 10% and/or to 70% (which applicants submit it does not), then the next cycle of assignments would show VM2 to have its allegedly adjusted ratio of 70%. It is clear from FIG. 17 that in the next cycle (i.e., when all operation counters are updated to "1"), VM2 does not have any adjusted ratio; rather, it continues to have the predetermined assignment ratio, namely 80%.

To summarize, Matsuura's example illustrates that when 10% of the resource is allocated upon entering a wait state, 70% of the resource is still remaining. There is no adjustment of the fixed 80%, just a description of how to reach the 80% (i.e., 10% + 70% = 80%). Thus, while Matsuura teaches how to attempt to obtain the fixed assignment ratio, there is no teaching or suggestion of how to dynamically adjust the allocation via adjustment of the predetermined assignment ratio.

Further, the Col. 12 example does not teach or suggest adjustment of an allocation across partitions, as claimed by the present invention. In this example, the 10% and 70% are associated

with a single guest and the calculation of the remaining assignment ratio does not depend on, nor does it affect any other guest. Thus, the remaining assignment ratio is not an adjustment across guests, let alone across partitions.

Maeurer does not overcome the deficiencies of Matsuura with respect to the Applicants' invention, as described hereinabove. The justification provided in the Office Action for combining Matsuura and Maeurer is "because the dynamic reallocation/configuration of a device with respect to channel/partitions provides a flexability [sic] for assigning resources responsive to system load conditions." The Applicants respectfully submit that this justification is not supported in either or both the cited references.

Maeurer describes a data processing system having one CPU (see, e.g., FIG. 1, and Col. 4, lines 20-22). There is no discussion in Maeurer of a system having a plurality of partitions, as recited by Applicants. Maeurer does not teach or suggest partitions; hence, there is no teaching or suggestion in Maeurer of a partitioned system, in which a partition has one or more central processors allocated thereto. Furthermore, there is no teaching or suggestion in Maeurer of managing workloads across two or more partitions of a plurality of partitions, as recited by the Applicants.

In addition, the Office Action equates a channel path, as used in Maeurer, with a partition, as recited by Applicants. To the contrary, the Applicants respectfully submit that a channel path is not a partition. Thus, per Applicants' Amendment A, dated June 19, 2003, in an effort to clarify the term "partition", Applicants amended independent claim 1 (as well as other independent claims) to indicate that a partition has one or more central processors allocated thereto. Since a channel path does not have one or more central processors allocated thereto, this amendment makes clear that a partition is very different from a channel path.

Since both Matsuura (as described hereinabove) and Maeurer fail to teach or suggest managing workload across partitions of a computing environment, comprising dynamically adjusting allocation of a shareable resource of at least one partition, the combination of these references also fails to teach or suggest Applicants' claimed invention. The Applicants' thus

respectfully submit that the suggested combination of Matsuura and Maeurer would not render obvious the Applicants' invention, as recited in claims 1-65. Reconsideration and allowance of these claims are thus respectfully requested.

Should the Examiner have any further concerns regarding this application, he is invited to contact Applicants' representative at the below listed number. As requested by the Examiner, enclosed herewith is a diskette containing a copy of the Response to Office Action.

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Dated: June 29, 2003.

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